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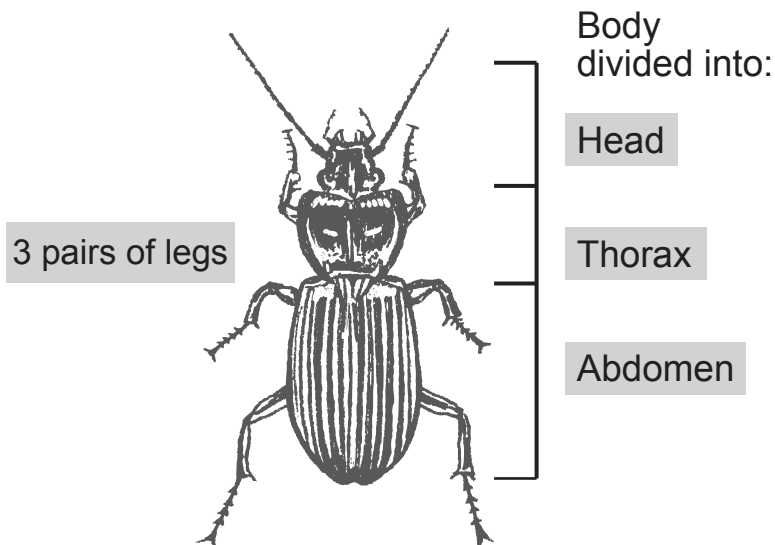
HSBC 滙豐

## 香港濕地生物多樣性普查 Discovering Biodiversity in Hong Kong Wetlands

生物多樣性的蹤跡 - 昆蟲辨認卡  
Biodiversity Journey- Insect Identification Card



## What are insects?



- Insects are invertebrates with an estimated number of 30 million, forming 85% of world's species

## How should I observe insects?

Insects could be found everywhere- from flowers, shrubs, soil surface, to the sky and water!  
Observe carefully and you may discover them!

You don't need high-tech equipment to observe insects. You'll only need:



Eyes



Camera



Magnifier



This card



### Safety rules during observation

- Respect the nature. Do not harm any insects.
- Take away nothing but memories; leave nothing but footprints.
- Turn off the flashlight while taking photos to avoid disturbing the insects.



# How to use this ID guide?

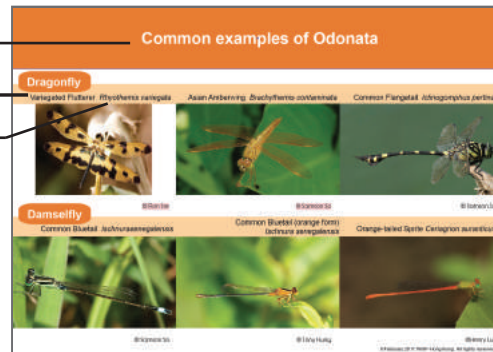
- The purpose of this ID guide is to identify the major groups of insects. An identification key should be used to distinguish the species.

In the classification system, we will divide organisms according to their body features. Insects belong to "Insecta" and are further divided into "orders". Identify the insect group using the classification guide first, then use the colour coding to flip to the right section.

Common species in Hong Kong

English Name

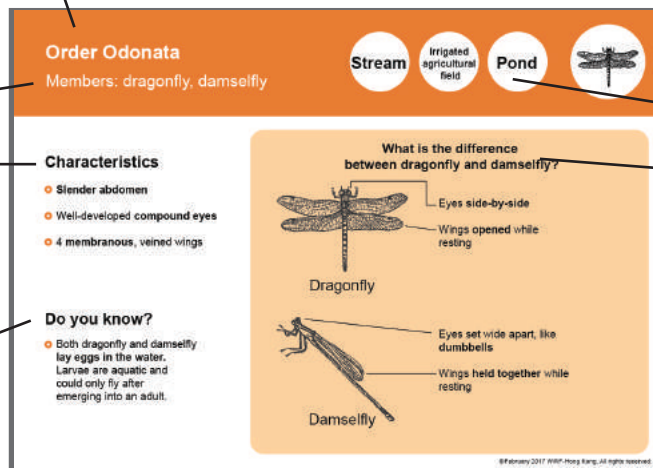
Scientific Name



Members of the order

Characteristics of the insect order

Behaviour and habits



Common habitats of the order

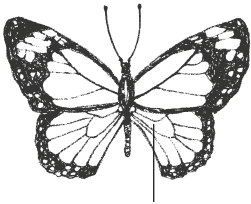
Ways to distinguish insects that are similar



# Classification Guide

## Lepidoptera

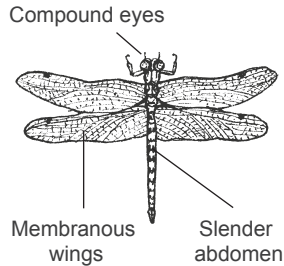
e.g. butterfly, moth



Wings covered with scales

## Odonata

e.g. dragonfly, damselfly



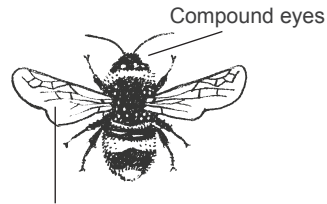
Compound eyes

Membranous wings

Slender abdomen

## Hymenoptera

e.g. bee, wasp, ant

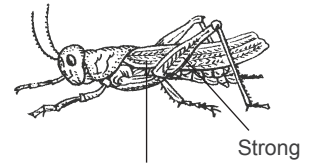


Compound eyes

Membranous wings

## Orthoptera

e.g. grasshopper, katydid, cricket

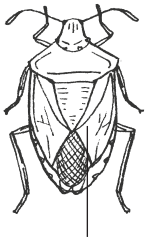


Leathery forewings,  
membranous hindwings

Strong  
hind legs

## Hemiptera

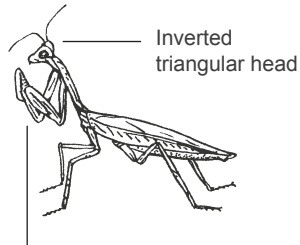
e.g. stinkbug, cicada,  
aphid, scale insect



Wing cases usually  
form X or Y shape

## Mantodea

e.g. mantis



Inverted  
triangular head

Sickle-like front legs

## Diptera

e.g. mosquito, housefly, fly



2 wings, hindwings developed  
into halteres to increase balance

## Coleoptera

e.g. beetle



Leathery forewings



# Order Lepidoptera

Members: butterfly, moth

Flower

Leaf



## Characteristics

- Wings of butterfly and moth are covered with **scales**, so they are classified as Lepidoptera, which means “scaly wings”.
- They have a **long mouthpart** for sipping nectar.



## Do you know?

- Some butterfly species like **eating faeces!**
- The wings of some butterflies and moths are covered with eye-shaped patterns, which can **scare or mislead predators**, on their wings.

## What is the difference between butterflies and moths?



Moth

- Shape of antennae **vary in shape**- some are feathery and some are serrated.
- Mostly nocturnal



Butterfly

- Have clubs at the antennae tip, like a **matchstick**.
- Mostly diurnal





# Common species of Lepidoptera

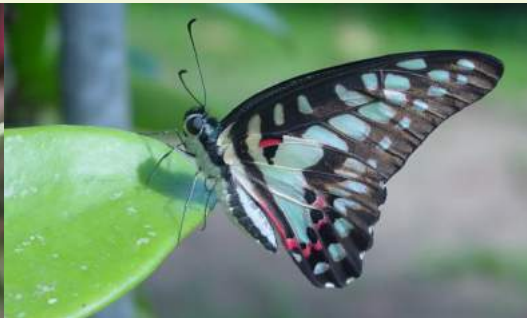
## Butterfly

Plain Tiger *Danaus chrysippus*



© Leung Wai Ki

Common Jay *Graphium doson*



© Leung Wai Ki

Common Mormon *Papilio polytes*



© Henry Lui

## Moth

Grey Sunset Moth *Lyssa zampa*



© Bena Smith

False Tiger Moth *Dysphania militaris*



© Henry Lui

Wasp Moth *Amata germana*



© Byron Li



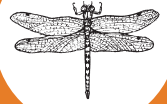
# Order Odonata

Members: dragonfly, damselfly

Stream

Irrigated  
agricultural  
field

Pond



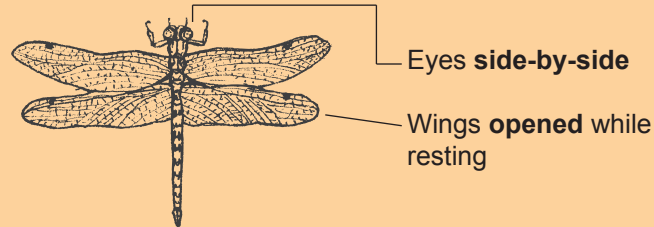
## Characteristics

- Slender abdomen
- Well-developed **compound eyes**
- 4 **membranous**, veined wings

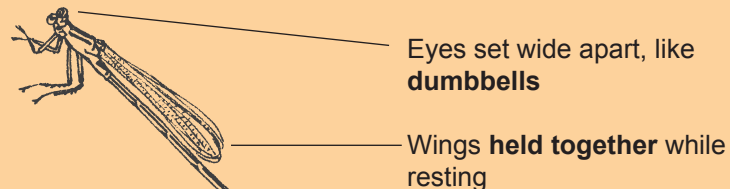
## Do you know?

- Both dragonflies and damselflies **lay eggs in the water**. Larvae are aquatic and could only fly after emerging into an adult.

What is the difference between dragonflies and damselflies?



Dragonfly



Damselfly



# Common examples of Odonata

## Dragonfly

Variegated Flutterer *Rhyothemis variegata*



© Fion Tse

Asian Amberwing *Brachythemis contaminata*



© Samson So

Common Flangetail *Ictinogomphus pertinax*



© Samson So

## Damselfly

Common Bluetail *Ischnura senegalensis*



© Samson So

Common Bluetail (orange form)  
*Ischnura senegalensis*



© Tony Hung

Orange-tailed Sprite *Ceragrion auranticum*



©Henry Lui



# Order Hymenoptera

Members: ant, wasp, bee

Leaf

Flower

Soil  
surface



## Characteristics

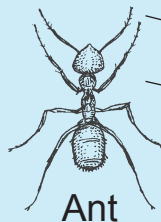
- 2 pairs of transparent, **membranous** wings (except worker ant with degraded wings)
- Well-developed **compound eyes**
- Mostly with **slender abdomen**



## Do you know?

- Ants and bees are **social animals** that could divide their work according to difference classes. For example, while the queen ant lays eggs and male ants reproduce, worker ants carry the food and clean the nest.

### What is the difference between ants, bees and wasps?



Ant

**Bent** antennae

**Female and male** ants have **4 wings** during reproduction; wings of **worker ants** that we commonly see have already **degraded**.



Bee / Wasp

Antennae mostly **clubbed/ bent**

4 transparent, **membranous** wings

Most female bees/wasps have **stings** at their back

## While observing bees/wasps:

- Do not disturb bees/wasps and their nests.
- Keep calm and walk away slowly when you encounter bees/wasps. They will leave in the end



# Common examples of Hymenoptera

## Ant

Black Tree Ant *Polyrhachis dives*



©WWF-Hong Kong

Weaver Ant *Oecophylla smaragdina*



© Henry Lui

## Bee / Wasp

Honey Bee *Apidae*



© Tim Chan

Paper Wasp *Polistes olivaceus*



©Henry Lui

*Delta pyrifforme*



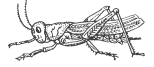
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# Order Orthoptera

Members: grasshopper, katydid, cricket

Grass



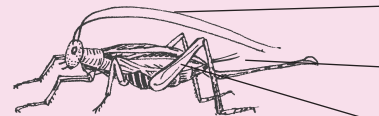
## Characteristics

- With **leathery forewings** and **membranous hindwings**, which open only when it flies
- With **strong hind legs** which facilitate jumping

## Do you know?

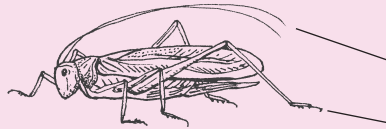
- Most of the Orthopterans (mainly male) will produce a **stridulating sound** while mating; they also have **tympanic organs** to listen to the sounds.
- When they are in danger, they will escape **by jumping and flying away quickly**

### What is the difference between crickets, katydids and grasshoppers?



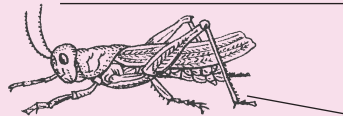
Cricket

- Thin antennae, longer than its body
- 1 pair of long **cerci** at the end of the abdomen
- Hind legs thicker than katydid



Katydid

- Thin antennae, longer than its body
- Hind legs thinner than grasshopper



Grasshopper

- Thick antennae, shorter than its body
- Hind legs thicker than katydid



# Common examples of Orthoptera

## Katydid

*Conocephalus melas*



©Haley Yeung

Large Brown Leaf Grasshopper  
*Mecopoda elongata*



© Katherine Leung / WWF-HK

## Cricket

Field Cricket *Teleogryllus derelictus*



©Byron Li

Rice Grasshopper *Oxya chinensis*



© Henry Lui

## Grasshopper

Long-headed Grasshopper *Acrida cinerea*



© Henry Lui

Tooth-legged Grasshopper *Ceracris fasciata*



©Jason Lau



# Order Hemiptera

Members: stinkbug, cicada, aphid, scale insect

Leaf

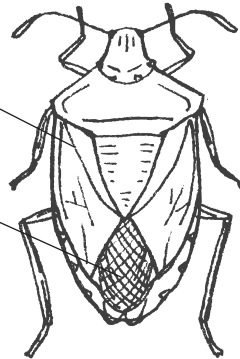
Shoot

Pond



## Characteristics

- Forms an **X or Y shape** at its back when wings are closed, different from Coleoptera
- Forewings with transparent lower part & leathery upper part. It appears to have only **half wings** when they overlap



## Do you know?

- The stinkbug possesses an **odour gland** which releases a stinky scent to scare away predators, and this is how its name comes from.
- With a **piercing and sucking mouthpart**, stinkbugs only feed on **fluid** such as plant sap and blood.

## While observing stinkbugs:

- ⬢ The secretion of some stinkbugs may cause an irritation. Avoid having a direct contact with them.



# Common examples of Hemiptera

## Terrestrial

Red Bug *Dindymus rubiginosus*



© Henry Lui

Bamboo Coreid Bug *Notobitus meleagris*



© Ben Halford

Lychee Stink Bug *Tessaratoma Papillosa*



© Byron Li

## Aquatic

Backswimmer *Notonectidae*



© Jason Lau

Water Skater *Gerridae*



© Alan Leung

Red Cotton Bug *Dysdercus cingulatus*



© Henry Lui



# Order Mantodea

Members: mantis

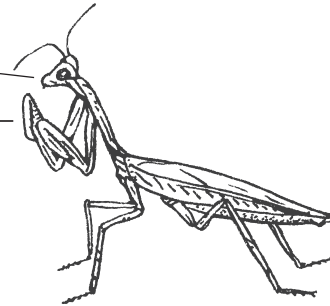
Grass



## Characteristics

Inverted triangular head

Sickle-shaped front legs put together at rest



## Do you know?

- ◉ Also known as “the praying mantis”, as they are like praying while at rest.
- ◉ Some **female** mantes may **eat the male** in the mating process if they are too hungry.
- ◉ As female mantes hatch, they hang themselves inverted on the branch and **secrete foam, which hardens to form a sack**, to protect the eggs inside.



# Common examples of Mantodea

Chinese Mantid *Tenodera sinensis*



© Byron Li

Mantid *Statilia maculata*



© Byron Li

Large Green Mantid *Hierodula patellifera*



© Byron Li

Flower Mantid *Creobroter gemmata*



© Byron Li



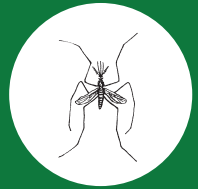
# Order Diptera

Members: mosquitoes, horseflies, flies

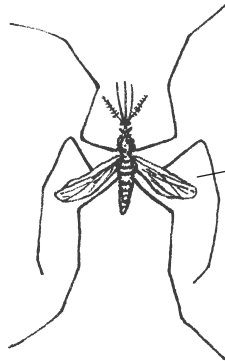
Carrion

Faeces

Leaf



## Characteristics



They possess **only 1 pair of wings** as their hindwings have developed into **halteres**, which increase the flying speed and flexibility

## Do you know?

- Usually only **female mosquitoes suck blood**, while male feed on fruit sap. Some mosquitoes (e.g. crane fly) are herbivores.
- **Robber flies** have incredible eyesight and they can catch preys in the air, using their spiny legs to prevent them from escaping and then suck their blood.



# Common examples of Diptera

Oriental Latrine Fly *Chrysomya megacephala*



©Byron Li

House Fly *Parasarcophaga* sp.



© Henry Lui

Asian Tiger Mosquito *Aedes albopictus*



© Henry Lui

Crane Fly *Tipulidae*



©Jason Lau

Moth fly *Psychoda* sp.



© Henry Lui

*Dolichopodidae*



©Tim Chan



# Order Coleoptera

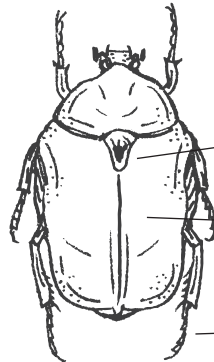
Members: beetle

Leaf

Shoot



## Characteristics



Forms a **T shape** at the back as wings are closed, different from stinkbugs

Leathery forewings to protect the flying hindwings

Mostly with **claw or stickiness** on the legs

## Do you know?

- Coleoptera is one of the largest orders, making up **40%** of insect species and at least **25%** of animal species in the world!
- Coleoptera can be found in a large variety of habitats- such as soil, flowers, animal dead bodies , water, and even faeces!



# Common examples of Coleoptera

Mai Po Bent-winged Firefly *Pteroptyx maipo*



© Tony Hung

*Sphenoraia nebulosa*



© Ben Halford

Blue-Spotted Tiger Beetle *Cicindela aurulenta*



© Henry Lui

Long-horned Beetle *Anoplophora chinensis*



© Byron Li

Shining Leaf Chafer *Mimela* sp.



© Jason Lau

Long-horned Beetle  
*Chlorophorus macaumensis*



© Byron Li